

Notice of Allowability

Application No.

09/595,075

Examiner

Tracy Dove

Applicant(s)

KWEON ET AL.

Art Unit

1745

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 12/15/03.
2. ☒ The allowed claim(s) is/are 1,3 and 9-14.
3. ☒ The drawings filed on 16 June 2000 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 12/15/03
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

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EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Angelo Gaz on 2/13/04.

The application has been amended as follows:

1. A positive active material for a lithium secondary battery of which the surface is coated with a metal oxide, wherein the positive active material compound comprises $\text{Li}_a\text{Ni}_{1-x-y}\text{Co}_x\text{M}_y\text{O}_2$ and M is a metal selected from the group consisting of Sr, La and Ce, and $0 < x < 0.99$, $0.01 \leq y \leq 0.1$ and $1.00 \leq a \leq 1.1$, wherein the metal oxide coated on the surface of the compound is an oxide of a single metal selected from the group consisting of Mg, Ti, Al, V, Co, K, Ca and B.
10. A positive active material for a lithium secondary battery of which the surface is coated with a metal oxide, wherein the positive active material compound comprises $\text{Li}_a\text{Ni}_{1-x-y}\text{Co}_x\text{M}_y\text{O}_{2-z}\text{F}_z$ and M is a metal selected from the group consisting of Sr, La and Ce, and $0 < x < 0.99$, $0.01 \leq y \leq 0.1$, $0.01 \leq z \leq 0.1$ and $1.00 \leq a \leq 1.1$, wherein the metal oxide coated on the surface of the compound is an oxide of a metal selected from the group consisting of Mg, Si, Al, K, Ca and B.

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The following is an examiner's statement of reasons for allowance: the claims are directed toward a positive active material compound having the formula of claim 1, claim 10 or claim 12 that is coated with a metal oxide.

The prior art does not teach the positive active material compound of claim 1 wherein M is Sr, La or Ce wherein the compound is coated with a metal oxide of a single metal selected from the group consisting of Mg, Ti, Al, V, Co, K, Ca and B. Li (WO 97/49136) teaches a lithium ion battery having a positive electrode material including a lithiated metal oxide core coated with a lithium ion conductor. The core material is preferably a lithiated transition mixed-metal oxide wherein the transition metals are selected from cobalt, nickel, vanadium, titanium and mixtures thereof. The coating material is preferably an alkali metal-metal oxide wherein the metal are selected from cobalt, vanadium, titanium, aluminum, boron and mixtures thereof. See page 6, lines 1-22. Note lithium and sodium (Na) are both alkali metals. However, Li does not teach the metal oxide coating of claim 1 because the single metal of the metal oxide is Mg, Ti, Al, V, Co, K, Ca or B (not Li or Na).

The prior art does not teach the positive active material compound of claim 10 wherein M is Sr, La or Ce wherein the compound is coated with a metal oxide of a metal selected from the group consisting of Mg, Si, Al, K, Ca and B. Nishida (JP 08-236114) teaches a lithium secondary battery having a positive electrode active material of a lithium transition metal multiple oxide which is coated with a metal oxide such as MgO, CaO or aluminum oxide. However, the prior art does not teach the active material compound of claim 10.

The prior art does not teach the positive active material compound of claim 12 wherein M is Al, Mg, Sr, La, Ce, V or Ti wherein the compound is coated with a metal oxide. Nishida (JP

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08-236114) teaches a lithium secondary battery having a positive electrode active material of a lithium transition metal multiple oxide which is coated with a metal oxide such as MgO, CaO or aluminum oxide. However, the prior art does not teach the active material compound of claim 12.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday-Thursday (9:00-7:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

February 13, 2004


Patrick Ryan
Supervisory Patent Examiner
Technology Center (TCO)